

Editor's note: As protection of the planet's flora, fauna and resources becomes increasingly important, China Daily is publishing a series of stories to illustrate the country's commitment to safeguarding the natural world.

College student Li Yuanfei was excited about the survey of Kuankuoshui National Nature Reserve in Southwest China's Guizhou province in late November.

"It was my first acquisition of knowledge in the southern habitat and the first time I participated in multidisciplinary scientific research," the 19-year-old said.

Li and seven other students and teachers from Beijing Forestry University participated in the survey of the nature reserve in Suiyang county, one of the country's most important bird habitats and a major population area of endangered leaf monkeys.

Majoring in wildlife conservation and management, the students joined wildlife experts on a three-day tour of northern Guizhou's mountainous areas, to conduct surveys of flagship species in the reserve.

Rich in bird species, the reserve is an ideal bird-watching site, especially for three colorful species — the Asian emerald cuckoo, the golden-breasted fulvetta, and the golden parrotbill.

Hu Canshi, an associate professor at Guizhou University's College of Life Science, said nearly half of all bird species in Guizhou can be found in the Kuankuoshui nature reserve.

"Over 240 bird species were recorded recently during a bird festival in the reserve, while about 500 bird species have been found in the province," said Hu, who is also a bird expert at the provincial wildlife protection association.

Ringmasters

Bird-ringing is one of the major tasks of forest rangers at the biggest station in the reserve. They use finely woven mist nets to capture wild birds and attach a small metal tag to the leg of each bird for individual identification.

The method can help researchers keep track of a bird's movement and history, Hu said.

After a demonstration of the technique by Xiao Xi, head of the station, Li volunteered to try bird-ringing. Her skilled handling of a bird, and accurate measurement of its anatomy impressed some of the avian experts.

"I have tried bird-ringing five or six times before during field practice," the sophomore said. "I missed the warm feeling of holding a small bird in my hands," she said, while conceding that the forest rangers are more adroit at the process.

The Chinese Academy of Forestry's National Bird-ringing Center issues the numbered metal bird tags, Hu said.

"The metal ring is like an identification card for a bird," Hu said. A bird's information, such as its wing span, is kept in a database. Researchers who capture a bird far away from where it was tagged are able to access its information.

"If researchers in Beijing capture a bird we released in Guizhou, for instance, the data can help indicate how the bird migrated," he said.

Since the bird-ringing station in



A Kuankuoshui National Nature Reserve forest ranger shows teachers and students from Beijing Forestry University mist nets that are used to capture and tag wild birds in Guizhou province in November. GENG GUOBIAO / FOR CHINA DAILY

Students' southern exposure deepens knowledge of nature

Visit to rich, biodiverse Kuankuoshui reserve opens eyes to nation's ecological treasures. **Zhao Yimeng** reports from Suiyang county, Guizhou.



Left: A forest ranger at the reserve in Guizhou demonstrates bird-ringing to visitors in November. GENG GUOBIAO / FOR CHINA DAILY **Right:** Three leaf monkeys are photographed in the nature reserve in Guizhou in May. PROVIDED TO CHINA DAILY



the reserve was established in 2021, a total of 154 birds of 37 different species have been tagged. However,

none of them have been traced by other stations, Hu said.

Shining examples

Apart from being home to many bird species under high-level State protection, such as Elliot's pheasant and the golden pheasant, the reserve also has fine examples of shining beeches (*Fagus lucida*).

The species can grow up to 25 meters tall in deciduous and mixed forests on karst mountains, beginning at an elevation of 1,400 meters.

The forest of shining beeches in the reserve features numerous old trees with large diameters, and is considered the best preserved and most representative cluster of the species in China.

Although late November is not a

suitable season for observing protected plants such as the shining beeches and dove trees, a medium-sized deciduous tree, students were trained to recognize different species by examining fallen leaves. They also acquired knowledge about different habitats when exploring the forest.

Hu Guoxiong, deputy dean of Guizhou University's College of Life Science and a plant expert, said several new plant species have been discovered in the reserve in recent years.

Hu's research team discovered a new species of *Burmanniaceae*, a family of flowering plants, in the reserve in 2019 and officially named it *Campylosiphon saundersii* this year.

The result was published in the

scientific journal *Systematic Botany* in October, proving that *Campylosiphon*, a genus of *Burmanniaceae* native to tropical western Africa and South America, is also distributed in China.

The population of *Campylosiphon saundersii* is extremely rare in China and has only been found in the Kuankuoshui nature reserve.

Other new species — including *Hemiboea suiyangensis*, a flowering herbaceous perennial — have also been discovered by researchers in recent years.

"The discovery of new species signifies better plant conditions and a more diverse habitat in the reserve. Also, as scientific research has gone deeper, new species have been discovered one after another," Hu said.

Multiplying monkeys

The reserve also has the world's second-largest distribution area of leaf monkeys, which are born with orange fur that develops into shades of gray and black.

Yang Guangmei, a leaf monkey researcher and a doctoral candidate at Guizhou University, said a team from the university launched a new investigation of the leaf monkey population this year.

The previous investigation in 2016 showed that there are about 195 leaf monkeys in the reserve, while the global population is 1,600 to 1,900, mainly distributed across northern Vietnam and China.

Although the current investigation isn't complete, the number of leaf monkeys in the reserve is expected to exceed 200, Yang said.

The growing number of leaf monkeys in the reserve has resulted in the animals expanding their home range, especially in recent years.

Leaf monkeys mainly eat leaves, fruit and flowers in the morning and afternoon, Yang said. Their eating habits determine the time and range of their activities. "The average range of their activities spans 30 to 50 hectares a year, depending mainly on feeding resources," Yang said.

Researchers surveyed the leaf monkey population in sample areas, or used drones with infrared cameras to trace their activities.

Forest ranger Zhou Renming said the number of leaf monkeys in the reserve has increased in recent years, especially since 2021. "Now I see, about seven to eight leaf monkeys at a time when I'm patrolling. They used to swing through the mountains, but now we sometimes encounter them eating loquats near the foot of the mountains," Zhou said.

"The improved natural environment and fewer human activities in the reserve have contributed to the larger population of leaf monkeys," he said.

The reserve is not open to tourists and young people in the area are moving to urban areas for work, he added.

Spot the simian

Freshman Ye Yixuan was a little disappointed because the research team did not observe a leaf monkey as they had hoped to do before the survey.

The young college students made arduous treks to reach spots where the monkeys were regularly seen. The closest they came was when a forest ranger spotted a leaf monkey on a tree and quickly informed the team.

However, after a 15-minute drive along a mountain road to reach the location, the monkey had already disappeared into the forest. The students lingered for 30 minutes but did not see the monkey.

Although Ye did not observe the monkey herself, she learned about the species from photos and videos taken by the rangers.

"We saw the cliffs and mountains the monkeys inhabit. Maybe a male monkey detected a group of 'outsiders' in their territory and hid the female and young monkeys," Ye joked.

"I hope I can catch these jumping 'elves' in the trees the next time I come to Guizhou," she said.

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By ZHAO YIMENG

Beijing Forestry University students and teachers recently took part in a "crossover expedition" in Asia's longest cave in Guizhou province, conducting experiments with experts to better understand and protect its rare ecosystem.

A previous survey of Shuanghe Cave conducted by an international team of experts that was released in September this year, showed it to be 409.9 kilometers long and 912 meters deep.

Zhou Wenlong, deputy director of the Guizhou Institute of Mountain Resources and an official with the Geological Society of China's Committee on Speleology, said during 35 years of scientific expeditions in Shuanghe Cave, international experts have discovered 40 giant panda fossils and geological relics of celestite.

"It is the longest dolomite cave with the largest celestine area in the world," Zhou said, adding that the cave is described as a "karst natural cave museum".

Zhou also led the students' cross-over expedition to the cave in late November. He said they conducted simple experiments with diluted hydrochloric acid to examine the



Left: Students and teachers from Beijing Forestry University explore the Shuanghe Cave in Guizhou province in November. **Right:** Zhou Wenlong (third from right) introduces the cave to the students and teachers. PHOTOS BY GENG GUOBIAO / FOR CHINA DAILY



chemical dissolution of carbonate rocks in the karst landscape.

Li Hanqing, a postgraduate student who participated in the expedition, wrote about the experience in her journal.

"We can see that water plays an indispensable role in the formation of caves. Water promotes the development of caves, and also erodes caves," Li said.

"A unique landscape is formed in the cave thanks to the participation of water and carbon dioxide. First, a type of rock 'soda straw' is generated. Then stalactites and stalagmites are formed, and later connected to become stone column."

Although the eight university students and teachers are not experts in the field of speleology, they still found something familiar in the

caves — lampenflora, autotrophic life-forms present in natural and artificial caves.

Installed lighting in show caves — those open to the public for observation — can cultivate plants, which can grow if they have enough artificial light and moisture.

Zhou said lampenflora is a big problem for researchers as it changes the appearance of show

caves and leaves visitors with the wrong impression of natural caves.

Acids secreted by lampenflora can also cause damage to rocks, disturbing a cave's ecology, he added.

"I hope these students and teachers can try fixing the problem of light plants through their forestry studies," Zhou said.

In the past, most students visiting Shuanghe Cave were primary and

middle school students learning about karst formations.

"The expedition involving college students is more sophisticated. Although they are crossover explorers, they absorbed knowledge more quickly and can achieve more," Zhou said.

Li said she was impressed by a poem projected on a rock in the cave that read "I can't tell you all my secrets, as they are still growing".

"As the longest cave in Asia, Shuanghe Cave is among the top in (the world) in terms of length and depth, and has formed a unique environment. But as the cave keeps 'growing', we haven't explored some parts of it," Li said.

Previously, the cave was surveyed at 257.4 km long and 665 meters deep, based on an international scientific investigation carried out before 2019.

Since 1988, international researchers and explorers have conducted 22 scientific expeditions in the cave, Zhou said.

Unlike research studies at scenic spots, scientific research is usually conducted in unexplored galleries.

Cavers are equipped with ropes and professional suits, and spend years exploring secrets in the underground kingdom, he added.